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Massachusetts 2021 Air Monitoring Network Plan Response to Comments November 23, 2021

MassDEP operates a network of 23 ambient air quality monitoring stations at locations across the Commonwealth as part of a comprehensive program to provide information about air quality to the public and to determine compliance with National Ambient Air Quality Standards (NAAQS). Each year, MassDEP is required to submit to the U.S. Environmental Protection Agency (EPA) an Air Monitoring Network Plan in accordance with Title 40 CFR Part 58.10. On June 15, 2021, MassDEP published a draft 2021 Network Plan for a 30-day public comment period. MassDEP received comments on the draft Plan from EPA and from citizens and local officials. MassDEP has summarized and responded to these comments below.

EPA's Comments

1. Comment: The addition of information to the annual network plan is appreciated, especially the section where each site is identified separately with siting information as well as a picture of the shelter. It appears the naming convention is that PM_{2.5} refers to a continuous FEM PM_{2.5}, where PM_{2.5} filter refers to the FRM measurement. For reasons described elsewhere in these comments, it can be important to identify which continuous FEM PM_{2.5} method is used.

Response: MassDEP has identified continuous FEM PM_{2.5} methods in Attachment 1.

2. Comment: Page 7, Ozone (O₃) Network – We appreciate the addition of language regarding the Chelmsford Manning Road Near Road site not meeting siting criteria for ozone in the initial paragraph. A footnote indicating it is nonregulatory can also be added with an asterisk next to this site in the table.

Response: MassDEP added a footnote for this site in the table.

3. Comment: Page 9, Sulfur dioxide (SO₂) – Note that we have identified resource savings opportunities that MA may wish to consider regarding sulfur dioxide monitoring.

Response: At this time MassDEP is not planning to reduce the number of the SO₂ monitors but will consider resource savings in the future.

- 4. Comment:** Page 10, Nitrogen dioxide (NO₂) – Note that we have identified resource savings opportunities that MA may wish to consider regarding nitrogen dioxide monitoring, in consultation with others in your Agency. In addition to flagging the Lynn monitor as a true NO₂ in the main paragraph, you may wish to add an asterisk and footnote next to this site in the table.

Response: MassDEP added a footnote for this site to the table. At this time MassDEP is not planning to reduce the number of NO₂ monitors but will consider resource savings in the future.

- 5. Comment:** Page 11, Carbon monoxide (CO), and site specifics on page 22 and 23. We understand that MA has considered moving its near road CO monitoring location from Von Hillern to Chelmsford, and if so it may be appropriate to mention that this is under consideration.

Response: MassDEP has made progress in resolving the CO monitoring issues and believes it will be unnecessary to move the CO monitor from the Von Hillern monitoring station.

- 6. Comment:** Page 13. PM₁₀ - We believe rewording the first sentence as follows may more accurately describe the PM₁₀ network: “MassDEP operates ~~four~~ **three** PM₁₀ ~~monitors~~ **monitoring locations** (low volume instruments) ~~at the locations listed below, including~~ **which includes** collocated monitors at the Boston - Roxbury NCore site for quality assurance purposes.

Response: MassDEP has addressed this comment in the PM₁₀ discussion on page 13.

- 7. Comment:** Page 14. PM_{2.5} continuous - We believe rewording/ adding to the first sentence as follows may more accurately describe the PM_{2.5} continuous network: “MassDEP operates ~~18~~ **17** continuous fine particulate matter (PM_{2.5}) ~~monitors at the locations~~ **monitoring locations** listed below, ~~including~~ **which includes** collocated monitors at Boston – Von Hillern (25-025-0044) for quality assurance purposes **for FEM/ FEM comparability. In addition, FRM filter based units are also used for quality assurance purposes with these continuous PM_{2.5} methods.**

Response: MassDEP has addressed this comment in the PM_{2.5} discussion on page 14.

- 8. Comment:** Page 14. PM_{2.5} continuous – As suggested in comments 1 and 7 above, MassDEP has indicated that continuous fine particulate matter (PM_{2.5}) monitors at these locations serve as the primary monitor. Because quality assurance collocation requirements for PM_{2.5} are based on the monitoring “method” used, it is important to distinguish and clarify which continuous monitoring methods are used and how collocation is met for each method. We are aware that at least 2 different continuous methods are used. As this is clarified, additional resource saving opportunities may become apparent in the PM_{2.5} filter based network, which is now primarily used to meet collocation obligations.

Response: MassDEP has added a collocation summary table on page 15.

- 9. Comment:** PM_{2.5} Network – On January 15, 2013, EPA revised the PM_{2.5} standard. In that rule, EPA also established that all continuous PM_{2.5} FEM monitors operating for more than 24 months should be used for comparison to the NAAQS unless a State specifically requests that the data be excluded under 40 CFR 58.11(e) and EPA approves that request. All of MassDEP’s BAMs (and a T640) have a Federal Equivalent Method (FEM) designation. We are pleased that MassDEP will use data from all its continuous FEM monitors for comparison to the NAAQS.

Response: MassDEP will continue to use data from all of its continuous FEM PM_{2.5} monitors for comparison with the NAAQS.

- 10. Comment:** Page 16. Photochemical Assessment Monitoring Stations (PAMS) – Relative to enhanced ozone related monitoring activities, we formally approved your PAMS implementation plan for your Lynn site on May 9, 2018; and on August 15, 2019, we approved your Enhanced Monitoring Plan (EMP). Regarding your EMP, we have cut and pasted what you proposed and we approved:

EPA’s 2015 Ozone NAAQS regulations require states with ozone non-attainment and/or that are in the Ozone Transport Region (such as Massachusetts) to develop enhanced monitoring plans (EMPs) to help determine the distribution of ozone in the state and region. MassDEP has participated in a collaborative planning effort with EPA and other Ozone Transport Commission (OTC) states on the development of EMPs. MassDEP believes enhancements to the monitoring network that it has taken adequately meet the new requirements. This includes maintaining ozone monitoring at the summit of Blue Hill in Milton that measures higher elevation ozone (which had previously been scheduled to close) and expanding ozone monitoring in Southeastern Massachusetts to address higher ozone values that occur along the South Coast. This has included adding ozone monitoring at the Fall River station (25-005-1004), replacing the Fairhaven station (25-005-1006), and establishing a new Brockton monitoring station (25-023-0005). MassDEP also is planning to add additional upper air measurements.

Response: MassDEP appreciates EPA’s approval of its enhanced ozone monitoring plan.

- 11. Comment:** On page 18 we acknowledge and support your effort described under “Enhanced Monitoring in Environmental Justice Communities.”

Response: MassDEP appreciates EPA’s support of MassDEP’s enhanced air monitoring in environmental justice communities.

- 12. Comment:** Page 18-19. We note and acknowledge the following as your “**Summary of Recent and Proposed Network Changes.**” We suggest adding any other changes being considered or as a result of public comment be included here.

MassDEP made the following recent changes to the monitoring network:

- In January 2021, MassDEP discontinued filter-based monitors at Brockton (25-023-0005), Haverhill (25-009-5005), Worcester – Summer Street (25-027-0023) and Chicopee (25-013-0008). MassDEP will rely on the primary continuous PM_{2.5} monitors at each of these sites.
- In April 2021, MassDEP replaced the temporary Weymouth – Bridge Street site (25-021-2004) with the Weymouth – Monatiquot Street site (25-021-2005). In addition to a continuous PM_{2.5} monitor, VOC samples and carbonyl samples, the new site includes continuous ozone and NO₂ monitoring.
- In April 2021, MassDEP established a new monitoring station in Chelsea (25-025-1004) with a continuous PM_{2.5} monitor and VOC samples and carbonyl samples collected every sixth day. MassDEP also deployed ten mobile (non-regulatory) PM_{2.5} sensors throughout Chelsea to characterize local air quality. MassDEP is evaluating opportunities to expand the use of mobile PM_{2.5} sensors in additional municipalities including Environmental Justice areas.
- In May 2021, MassDEP installed a ceilometer at Lynn (25-009-2006) and plans to conduct PAMS monitoring in accordance with the approved Implementation Plan and Enhanced Monitoring Plan (EMP) by the June 1, 2021 start date.

MassDEP plans to make the following changes to the monitoring network:

- MassDEP plans to establish a new PM_{2.5} monitoring station in the Chinatown neighborhood of Boston.

Response: MassDEP had updated the summary to include its evaluation of whether to move one CO monitor noted in the response to comment #5.

13. Comment: In attachment 2, it may be worth noting that Pb measured at Harrison Ave is not considered to be a NAAQS compliant measurement.

Response: MassDEP has added a note to attachment 2.

Other Comments

14. Comment (Kathy Dopp): There need to be sites to measure CH₄ fugitive methane gas levels as well, or at least to report known CH₄ fugitive gas emissions.

Response: MassDEP's monitoring network is designed primarily to determine compliance with EPA's National Ambient Air Quality Standards (NAAQS) for criteria pollutants. EPA's current list of criteria pollutants does not include methane gas (CH₄) and EPA has not issued

NAAQS for CH₄, nor has EPA established federal reference monitoring methods for CH₄. The Commonwealth's climate goals are expressed in terms of reductions in greenhouse gas emissions rather than ambient concentrations. These goals include reductions in CH₄, which is a powerful greenhouse gas. For example, MassDEP has adopted regulations at 310 CMR 7.73 that impose annually declining CH₄ emission limits on Massachusetts natural gas distribution system operators. MassDEP does not plan to add CH₄ sampling to its existing monitoring stations because such monitoring would not provide useful information relative to achieving ambient air standards. However, MassDEP does report fugitive CH₄ emissions in its greenhouse gas (GHG) emissions inventories that it periodically prepares to report progress on meeting the Commonwealth's greenhouse gas emissions reductions goals, which is available on the MassDEP Emissions Inventories webpage at:

<https://www.mass.gov/lists/massdep-emissions-inventories#greenhouse-gas-baseline,-inventory-&-projection->

15. Comment (MP Feitelberg): Please install air-quality measurement gear at Brayton Point in South Somerset. For over three years, the air quality at Brayton Point has been horrendous. People's bloodstreams and urine analyses are turning up all kinds of heavy metals and other toxins. MassDEP was copied on the long-suppressed data and report by SAGE Environmental of Boston. This site has a history of polluting industries (e.g., former Brayton Point coal-fired power plant) and is near major interstate highways. Brayton Point is on the Wild and Scenic Rivers Registry, which designation protects residents' health, peace of mind and quality of life, including their right to peaceful enjoyment. Pollution is anathema to this legislation, especially that which is the result of unprecedented commercial activity at the Brayton Point site.

Has DEP noticed any changes at the 659 Globe Street air monitoring station in Fall River, whose Site ID is 25-005-1004? And if not, how often are the data checked, and how do all your sites account for the COVID19-related slump in human activity has reduced particulate emissions as early as January 2020? The Commonwealth has every reason to commence monitoring operations at the nearest Fall River and Swansea waterfronts to Somerset. Please also set up a monitoring site at Excel Metals Recycling in Assonet's Freetown, which shreds automobiles into bread-loaf-sized chunks, then shreds them. And now that the Parallel Recycling facility is proposed for the North End of New Bedford, which build a spur onto the freight tracks to import whole freight cars full of Superfund scrap metal, New Bedford also needs a monitoring station.

Response: MassDEP currently operates an air monitoring station in Fall River. The data generated by the existing site is considered representative of ambient conditions in the surrounding area and shows that fine particulates (PM_{2.5}), ozone (O₃) and sulfur dioxide (SO₂) levels are well below the National Ambient Air Quality Standards (NAAQS). MassDEP routinely reviews the monitoring data from the Fall River monitoring station, and the data are available on MassDEP's MassAir website at <https://eeaonline.eea.state.ma.us/dep/massair/web/#/pollution/map/max>. Trend graphs for the Fall River station presented in MassDEP's [2020 Air Quality Report](#) indicate these levels have been consistently below the NAAQS for the past 10 years and have trended downward. The most noticeable air monitoring trend due to the COVID19 restrictions was a reduction in nitrogen dioxide levels due primarily to less vehicle traffic; however, MassDEP does not

monitor nitrogen dioxide in Fall River. MassDEP's current monitoring network meets EPA's requirements for adequate coverage in Southeastern Massachusetts and statewide. In general, air quality issues relating to existing or proposed facilities are best addressed on a facility-specific basis. MassDEP is directly addressing issues at the Excel Recycling facility in Freetown, and the proposed Parallel Products facility is currently being addressed in the Massachusetts Environmental Policy Act (MEPA) review process. Therefore, MassDEP is not planning to further expand the ambient air monitoring network at this time. MassDEP will continue to evaluate its air monitoring network on an annual basis, in consultation with EPA, to ensure that it provides adequate coverage for determining statewide compliance with the NAAQS.

- 16. Comment** (Thomas McGrath): MassDEP should consider obtaining and reporting Total Non-Methane Hydrocarbon (i.e., total volatile organic compounds) data from the volatile organic compounds (VOC) canister monitoring sites (Chelsea, Weymouth, Roxbury, and Lynn). Total VOC concentrations would be of interest for the two new sites (i.e., Weymouth and Chelsea), compared to typical concentration at the Boston and Lynn sites to provide perspective and background). The State of Rhode Island Laboratory formally reported those values. Exposure of the population to the total array of hydrocarbons (as opposed to just the target VOCs) was in issue regarding a study that was performed in East Boston, in association with the installation of a new runway at Logan Airport in the 2008/2010 timeframe. The Chelsea location would have the same issues as East Boston, including possible impacts from fuel storage facilities, the Airport and nearby heavy vehicle traffic.

Response: MassDEP relies on the Rhode Island State Health Laboratory to analyze its VOC samples. The Laboratory no longer analyzes Total Non-Methane Hydrocarbon because it is not required for EPA's National Air Toxics Trends Stations (NATTS) program. MassDEP will relay this comment to the Laboratory and if the Laboratory resumes Total Non-Methane Hydrocarbon analysis MassDEP will report the results as part of its ongoing VOC data reporting.

- 17. Comment** (Conservation Law Foundation): CLF is particularly concerned about the air quality in neighborhoods of color and low-income communities, where residents face disproportionate exposure to harmful air pollutants and, as a result, suffer higher rates of asthma and other respiratory and cardiovascular diseases.

CLF recommends that MassDEP modify the Massachusetts 2021 draft Air Monitoring Network Plan ("Network Plan") to add additional monitors to measure particulate matter (PM), including PM_{2.5}, PM₁₀, ultrafine particles ("UFP"), volatile organic compound ("VOC"), O₃, CO, SO₂, nitrogen oxides ("NO_x"), and black carbon, to be sited in environmental justice ("EJ") populations facing disproportionate levels of air pollution and the resulting negative health effects.

CLF recommends that UFP matter monitoring capabilities be added to all existing and planned monitoring stations, and at least to monitoring stations near major roadways, such as Boston - Chinatown, Boston - Roxbury, Chelsea, Lynn, Springfield. Additionally, while the Commonwealth's air monitoring network includes 18 air monitors measuring PM_{2.5}, and 7

monitors for black carbon, there are often few near roadways, ports, or airports to identify pollution hotspots. CLF acknowledges and thanks MassDEP for installing a new PM_{2.5} air monitor in Chelsea near Logan Airport, busy roadways, playground, and fields. CLF recommends expanding UFP and black carbon monitoring to all existing and future stations throughout the network, and at least to stations to be sited near major roadways, major ports, and all commercial airports, including Worcester.

CLF is pleased that, since the issuance of the 2020 network plan, MassDEP has added PM_{2.5} monitoring capabilities to stations located in Boston's Kenmore neighborhood and in Chelsea; CLF further encourages MassDEP to install two multi-parameter monitoring stations in Boston's Chinatown and two multi-parameter monitoring stations in downtown Boston. The new monitoring stations in Chinatown and downtown should monitor for all pollutant parameters associated with tailpipe pollution – including PM_{2.5}, PM₁₀, VOCs, O₃, NO_x, CO, SO₂, black carbon, and UFPs. MassDEP should ensure that the new monitoring stations have the capacity to meet all future monitoring needs, as it will be more challenging and costlier to install monitoring capabilities for additional parameters after the stations are built.

CLF recommends that MassDEP add a stationary air monitoring station in East Boston, Everett and Revere to its air quality monitoring network. The new station should have the capacity to test for all pollutants associated with nearby industrial emissions and exhaust pollution, including PM_{2.5}, PM₁₀, VOCs, O₃, NO_x, CO, SO₂, black carbon, and UFPs.

CLF Recommends that MassDEP Install at Least Thirty Mobile PM Air Quality Monitors Across the Commonwealth. CLF encourages MassDEP to dramatically expand its air quality monitoring capacity by adding a number of mobile PM air quality monitors to its network. Given their small size, ease of siting, and low cost, MassDEP could quickly deploy multiple mobile monitors to immediately increase its PM_{2.5} and UFP data. Mobile air quality monitors, such as those available from PurpleAir, can be purchased for less than \$300 and installed on the side of any building, so long as there is internet access and electricity. Installing many mobile monitors would provide MassDEP with more granular air pollution data for particular neighborhoods leading to better, local solutions for specific communities' air quality problems.

Worcester, Springfield, and Boston are ranked eleventh, twelfth, and eighteenth, respectively, by the Asthma and Allergy Foundation in 2021 as the top places that are most challenging to live with asthma. Suffolk County, the county which encompasses Boston, Chelsea, Revere, and Winthrop, is the Massachusetts county with the highest average PM_{2.5} concentrations, with average concentrations 88 percent above the state average. CLF encourages MassDEP to focus on ensuring comprehensive air quality monitoring coverage across the Commonwealth by installing at least thirty mobile monitors, beyond those already dedicated to Chelsea. These mobile monitors will provide both a comprehensive picture of air quality across the Commonwealth and a focused view in EJ populations suffering higher rates of air pollution-related negative health effects, including in Chinatown, East Boston, Everett, and Revere.

CLF also recommends that MassDEP install mobile air quality monitors in Worcester and Springfield. Springfield suffers from extremely high rates of asthma prevalence compared with the rest of the state – the Asthma and Allergy Foundation of America ranked eleventh

Springfield in its list of U.S. “2021 Asthma Capitals” due to its high rates of overall asthma prevalence, which is an improvement from 2019 when the city ranked first in the nation (17.35 percent compared with a statewide average of 11.5 percent) and number of emergency room visits for asthma. Highway I-91 runs through Springfield and contributes greatly to the City’s vehicle emissions levels, which are 43 percent higher than the state average. Such high vehicle emissions result in high levels of PM_{2.5}. Springfield is an EJ population: 89.6 percent of the population resides in EJ populations. Given Springfield’s high air pollution-related health burden, MassDEP should establish a more comprehensive network of mobile air quality monitors to better understand the sources and patterns of its air pollution problems.

Finally, CLF recommends that MassDEP engage with the Environmental Justice Advisory Council established pursuant to An Act Creating a Next-Generation Roadmap for Massachusetts Climate Policy and Executive Order 552 to determine other appropriate locations for future mobile and permanent air monitoring locations, including locations that are disproportionately burdened by transportation infrastructure.

Response: MassDEP is concerned about disparate air quality impacts on communities of color and other communities with environmental justice populations. In 2021, MassDEP established a new monitoring station in the City of Chelsea measuring PM_{2.5} (both a regulatory monitor and a PurpleAir sensor) and VOCs and deployed an additional nine PurpleAir PM_{2.5} sensors throughout the City. The goal of this project is to characterize local air quality and work with the community to identify potential sources of pollution as well as emissions reduction and mitigation strategies to protect human health. In addition, MassDEP is in the process of establishing a new PM_{2.5} monitoring station in the Chinatown neighborhood of Boston, which has a designated Environmental Justice population. MassDEP is seeking to place this monitor near the I93 and I90 interchange.

MassDEP is seeking to expand the use of mobile air monitoring sensors, especially in environmental justice communities. In July 2021, MassDEP announced a competitive grant program which provides, at no cost, between five and ten PM_{2.5} PurpleAir air sensors to each qualifying municipality, with a preference for applications from cities and towns with Environmental Justice populations. MassDEP has allocated \$200,000 for this grant program, which could represent over 600 additional sensors deployed throughout Massachusetts if communities take full advantage of the grant opportunity.

Due to limited resources, MassDEP is not able to establish additional full-scale regulatory monitoring stations that measure all criteria pollutants in all of the communities CLF recommended. Such monitoring stations are very resource and labor intensive and the additional monitoring data obtained likely would have limited value since levels of all criteria pollutants are well below the NAAQS, including for PM_{2.5}, PM₁₀, O₃, NO₂, CO, SO₂, and lead. MassDEP does not have plans to add UFP monitoring at this time due to limited resources and because EPA has not established NAAQS or standardized monitoring methods for UFPs and there would be significant uncertainty in interpreting monitoring results. MassDEP will continue to evaluate air monitoring technologies and to seek input from Environmental Justice communities and organizations including the new Environmental Justice Advisory Council.